

## REMARKS

### Drawing and Specification

The objections set forth beginning at page 2 of the July 28, 2004 Office action regarding changing "Fig. 1" to "Figure" in the Drawing and Specification are moot. Applicant respectfully directs the Office's attention to the Preliminary Amendment filed on January 13, 2004 that, among other things, amended the figure and the specification by changing the figure-related references from "Fig. 1" to "the figure."

For the convenience of the Office, Applicant is enclosing a copy of the figure previously submitted as part of the Preliminary Amendment, which is identical to that submitted in the parent application (U.S. Appln. No. 09/882,156, now U.S. Pat. No. 6,703,341). If the Office would like a copy of the entire previously submitted Preliminary Amendment, please contact the undersigned.

### Amendment of the Specification

The title of the invention has been amended to reflect the fact that the claims, as amended, are directed solely to compositions.

### Amendment of the Claims

The claims have been amended by cancelling, without prejudice to their patentability, claims 12-29. Applicant reserves the right to file a continuation application directed to the subject matter of claims 12-29.

Additionally, the amendment added claims 30-42. No new matter was added by this amendment. Support for claims 30-42, in general, is found in the text beginning at the second paragraph on page 5 and continuing through page 7 of the specification. Support for claims 30-35 is also found in the last paragraph on page 8 and continuing through page 9 and in the second paragraph beginning on page 12 of the specification and continuing to page 13 of the specification. Support for claim 35 is also found in the last paragraph beginning at page 10 of the specification. Support for claims 36 and 37

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is also found in the second paragraph beginning on page 12 of the specification and continuing to page 13 of the specification. Support for claim 38 is also found in the first whole paragraph on page 13 of the specification. Support for claims 39 and 40 is also found in the second whole paragraph on page 13 of the specification. Support for claims 41 and 42 is also found in the last paragraph beginning on page 9 and continuing onto page 10 of the specification.

Included herewith is a check for the \$88.00 fee for one excess independent claim.

Double Patenting

Enclosed herewith is a completed and executed form PTO/SB/26, Terminal Disclaimer To Obviate A Double Patenting Rejection Over A "Prior" Patent, in which the Assignee, M-I L.L.C., disclaimed any term for the patent granted on the instant application that would extend beyond the expiration date of U.S. Pat. No. 6,251,348. Also included is a check for the \$110.00 fee for filing the terminal disclaimer pursuant to 37 CFR 1.20(d).

In view of the foregoing, the double patenting rejection to the claims is obviated and Applicant respectfully requests that it be withdrawn.

Supplementary Information Disclosure Statement

Enclosed herewith is a Supplementary Information Disclosure Statement. Submitted with the Supplemental IDS is a check for the \$180.00 fee set forth in 37 C.F.R. 1.17 (p).

Additional Remarks

Further, Claims 30-42 are patentable over Matsuda et al. (U.S. Pat. No. 4,187,282), Araki et al. (U.S. Pat. No. 4,149,997), and Kouwenhoven et al. (U.S. Pat. No. 3,832,445) that were cited during the examination of the parent application to the present application (U.S. Appln. No. 09/882,156 now U.S. Pat. No. 6,703,341).

Claims 30-37, 41, and 42 require, among other things, that the activator have a higher electro-potential than the oxide product (e.g., iron oxide, iron hydroxide, zinc oxide, zinc hydroxide, or combinations thereof) and only constitute a relatively small portion of the claimed composition (e.g., between about 0.125% and about 5% by weight of the composition). In contrast, Matsuda et al. disclose a titanium oxide based composition (i.e., at least about 50% titanium oxide, see claim 1) that contains 2-50% or 4-50% of iron oxide and/or copper oxide (column 3, lines 26-29). Titanium oxide has a higher electro-potential than iron oxide, iron hydroxide, zinc oxide, zinc hydroxide, or combinations thereof, thus it qualifies as an activator as used in the claims of the present invention and Matsuda et al.'s disclosed titanium dioxide concentration of at least 50% far exceeds the about 0.125% to about 5% of the composition allowed by claims 30-33, 36, 37, 41, and 42. Similarly, it exceeds the between about 0.25% and about 2% of the composition allowed by claim 34, and the less than about 1% of the oxide product allowed by claim 35. Thus, the relatively high concentration of titanium dioxide (activator) disclosed by Matsuda et al. does not anticipate the relatively low amount of activator allowed by claims 30-37, 41, and 42.

Likewise, Araki et al. also fail to disclose a sulfur scavenging composition having a relatively small amount of activator. Specifically, Araki et al. disclose using heated rhodochrosite mixed with other 1-80% by weight of oxides of Fe, Ni, Cr, Co, Cu, Zn, Sn, Ti, V, and W as a catalyst for reducing nitrogen oxides. Rhodochrosite, however, comprises 55.74% by weight of MnO (column 2, lines 35-40). Manganese oxide has a higher electro-potential than iron oxide, iron hydroxide, zinc oxide, zinc hydroxide, or combinations thereof, thus it qualifies as an activator. So, even at the 20% minimum amount of rhodochrosite disclosed by Araki et al., the concentration of manganese oxide is greater than 11% by weight, which is more than twice the amount allowed by the claims 30-33, 36, 37, 41, and 42. Similarly it is over 5 and 11 times amounts allowed by claims 34 and 35, respectively. Thus, the relatively high concentration of manganese dioxide (activator) disclosed by Araki et al. does not anticipate the relatively low amount of activator allowed by claims 30-37, 41, and 42.

Kouwenhoven et al. disclose a solid regeneratable acceptor for removing sulfur dioxide from a gas, wherein the acceptor comprises 1-25% or 5-15% by weight of copper in the form of cupric oxide supported on a carrier (column 2, lines 43-49, and claim 1). The acceptor disclosed by Kouwenhoven et al. does not contain iron oxide, iron hydroxide, zinc oxide, zinc hydroxide, or combinations thereof. Despite this failure, the Office, during the prosecution of the parent application asserted, that Kouwenhoven et al.'s statement at column 2, lines 1-4 that "[o]ther acceptors comprising alkaline metal supported by either iron or combination of iron and antimony also been described in the literature as in U.S. Pat. No. 3,411,865" taught combining iron oxide with cupric oxide. Kouwenhoven et al.'s statement and the '865 patent only disclose that the addition of iron and iron compounds with alkali metal compounds, not with cupric oxide. The assertion that the combination of iron oxide and cupric oxide is obvious based on Kouwenhoven et al.'s invention and their statement concerning the '865 patent is incorrect and is not supported by a case of *prima facie* obviousness.

To establish a *prima facie* case of obviousness, there must be, among other things, some suggestion or motivation to combine the teachings of the references. Despite this requirement, the Office failed to set forth any reason that someone of skill in the art would be motivated to combine Kouwenhoven et al. and the '865 patent. Rather, the Office merely alleged that Kouwenhoven et al. could be modified with the addition of iron oxide. The "fact that references can be combined or modified is not sufficient to establish *prima facie* obviousness" (MPEP 2143.01). In fact, if there is any teaching at all, it would be against the combination. Specifically, Kouwenhoven et al.'s citation of the '865 patent was for the purpose of distinguishing their invention from the prior art. According to Kouwenhoven et al., the prior art sulfur dioxide acceptor materials (including the '865 patent) required relatively high regeneration temperatures (e.g., greater than 500 °C), whereas their material was regenerated at a temperature between 300 and 500 °C, and preferably between 350 and 450 °C (Kouwenhoven et al. at column 3, lines 62-66; and '865 patent at column 2, lines 60-63). Thus, Kouwenhoven et al. considered the properties of '865 acceptor to be less than desirable

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and one of skill in the art reading this would not be motivated to combine the teachings of Kouwenhoven et al. and the '865 patent. In view of the foregoing, claims 30-37, 41, and 42 are nonobvious and patentable over Kouwenhoven et al.

Claims 38-40 are also novel, non-obvious, and patentable over the foregoing references. For example, claim 38 requires, among other things, a sulfur scavenging composition that comprises an iron oxide product at a concentration that is between about 95% and about 98.875% by weight. None of the foregoing references disclose a sulfur scavenging composition with such a relatively large amount of iron oxide as required by claim 38. Similarly, the sulfur scavenging compositions of claims 39 and 40 require, among other things, a water carrier at a concentration that is between about 50% and about 80% by weight. None of the foregoing references disclose a water carrier.

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Favorable consideration and allowance of claims 30-42 is respectfully requested.

The Commissioner is hereby authorized to charge any additional fees that may be required to Deposit Account No. 20-0823.

Respectfully submitted,



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